

REMARKS

Claim 112 has been amended without prejudice. As such, claims 45-53, and 112 are pending after entry of the present amendment. No new matter enters by way of the present amendment. Support for the foregoing claim amendments may be found throughout the specification; for example; the Specification at page 9, line 6 - page 11, line 13; Example 4; and the original claims.

1. Rejections under 35 U.S.C. §103

Claims 45-50 and 112¹ were rejected under 35 U.S.C. § 103(a) as being allegedly obvious over Knauf *et al.* (US 6,426,447). Office Action at page 2. In rejecting the claims, the Office asserts that “[g]iven the recognition of those of skill in the art of the value of transforming a plant with more than one fatty acid modifying enzyme coding sequence and including synthase factor proteins and thioesterases for the purpose of increasing levels of medium-chain fatty acids in a plant seed, as taught by Knauf *et al.*, it would have been obvious to one of ordinary skill in the art to use the sequences and the methods taught by Knauf *et al.* to produce a plant transformed with coding sequences for both a factor synthase protein and a thioesterase for the purpose of increasing levels of medium-chain fatty acids.” Office Action at page 3. Applicants respectfully disagree.

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on the applicant’s disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

First, Applicants respectfully assert that the Examiner has failed to establish a *prima facie* case of obviousness because the Examiner has not provided an adequate explanation of the

¹ Claims 45-50 depend from claim 112.

suggestion or motivation to modify Knauf *et al.* The Examiner asserts that Knauf *et al.* teaches separately and independently transforming a plant with synthase factor protein coding sequence or a thioesterase coding sequence. Office Action at page 3 and Knauf *et al.* at column 15, line 43 - column 18, line 12 and Examples 2-4. Despite this admission the Examiner appears to allege without pointing to evidence that one of ordinary skill in the art would have the motivation to combine “synthase factor proteins and thioesterases for the purpose of increasing levels of medium-chain fatty acids in a plant seed.” *Id.* A bold assertion is not enough to prove the basis for a motivation to combine and Applicants respectfully request that the rejection be withdrawn.

Picking out synthase factor proteins and thioesterases from lists of enzymes is not sufficient when, as here, Knauf *et al.* merely lists potential enzymes. An assertion that “[f]or some applications, the expression of more than one fatty acid modifying agent will be desired” is not a suggestion to combine a plant medium chain thioesterase protein with a plant synthase factor protein heterologous to the host plant. Knauf *et al.* at column 6, lines 58-60.

Moreover, the Examiner does not address the expectation of success in modifying Knauf *et al.* That is, the Examiner has failed to establish that there would have been a reasonable expectation of success in modifying Knauf *et al.* by specifically coordinating synthase factor protein expression with the expression of thioesterase proteins in a plant. The Examiner has argued that it would have been obvious to one having ordinary skill in the art at the time the claimed invention was made to transform a plant with both the synthase factor protein coding sequence and at least one thioesterase coding sequence. Office Action at page 3. Even if, as the Examiner asserts, Knauf *et al.* suggests transforming a plant with both the synthase factor protein coding sequence and at least one thioesterase coding sequence, one of ordinary skill in the art would not have the reasonable expectation that the combination would result in an increase of medium-chain fatty acids in transgenic plant seeds relative to the percentage of medium-chain fatty acids produced in seeds expressing only one or more plant-chain-medium thioesterase proteins.

This is further confirmed by the unexpected finding that expression of synthase factor proteins in combination with the expression of thioesterase proteins in plant seeds increases the levels of medium-chain fatty acids over levels obtainable by expression of thioesterase proteins alone. Specification at page 9, line 6 - page 11, line 13 and Example 4. Because the expression

of synthase factor proteins in plant seeds alone does not produce detectable levels of medium chain fatty acids, this finding is both surprising and unexpected. *Id.*

For the foregoing reasons, Applicants respectfully assert that the Examiner has failed to establish a *prima facie* case of obviousness over Knauf *et al.* Therefore, Applicants respectfully request withdrawal of the rejection of claims 45-50 and 112 under U.S.C. § 103(a).

2. Claim Objections

Claims 51-53² were objected to for allegedly depending on a rejected base claim. Office Action at page 4. Applicants respectfully request acknowledgement if the subject matter of claims 51-53 would be allowable if written as independent claims.

CONCLUSION

In view of the above, each of the presently pending claims is believed to be in immediate condition for allowance. Accordingly, the Examiner is respectfully requested to withdraw the outstanding objection and rejections of the claims, and to pass this application to issue. The Examiner is encouraged to contact the undersigned at (202) 942-5186 should any additional information be necessary for allowance.

Respectfully submitted,



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² Claims 51-53 depend from claim 112.